Teleconferencing:
Innovation in delivering distance-learning programmes

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Abstract
In 2001 UMIST commenced the provision of a Master of Science degree in Commercial Management for a major blue chip telecommunication company. The programme is delivered via a series of distance learning modules using traditional hard copy workbooks and is reinforced by face-to-face teaching sessions. The face-to-face sessions comprise a one-day introductory session and a one-day revision session on the completion of the three-month module. During the intervening three months students are supported by tutorials utilising web boards and a weekly one-hour teleconference.

This paper investigates the pedagogic issues surrounding the provision of tutorial support via teleconferencing. The teleconferencing technology enabled sessions to be recorded for those students unable to participate. These recording have been analysed using content analysis, allowing analysis of the interactions between tutors and students and the interactions between students themselves. The paper presents the results of this analysis. Further, student evaluation of the effectiveness of these sessions has indicated that these sessions have been one of the most rewarding aspects of the programme: contributing to the maintenance of morale and group cohesion. The paper also presents a protocol and best practice for the use of teleconferencing as tutorial support.

Keywords: eBusiness strategy, change management, co-evolutionary strategies, eMarkets, value creation, eKnowledge

Distance Learning

Distance Learning is a general term used to cover the broad range of teaching and learning events in which the student is separated (at a distance) from the instructor, and generally other fellow learners. The United States Distance Learning Association (USDLA), an advocacy group founded in 1987, defines distance learning as "The acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance." See http://www.usdla.org/
Distance learning might be traced to the middle of the 19th century; in both Europe and the United States the newly developed postal systems provided the medium for teachers and learners to interact. Previously such interaction had only been possible by face-to-face contact. Early pioneers of distance learning used the best technology of their day, the postal system, to open educational opportunities to people who wanted to learn but were not able to attend for face-to-face contact. This allowed many who could not attend, for any number of reasons, to gain access to educational opportunities. In England, Isaac Pitman the creator of Pitman Shorthand began teaching shorthand by correspondence in Bath in 1840. Students were instructed to copy short passages of the Bible and return them for grading via the new post system. This system of distance learning was taken up by many commercial organisations.

Universities also began to provide distance learning courses for those who could not attend in person. United Kingdom Universities have long espoused distance learning; the University of London began in 1850 and the tradition has continued through to the present day. The Open University was set up by Royal Charter in 1969 and has become one of the world’s prestigious universities; since its creation the OU has exposed more than 2 million people to the benefits of Higher Education.

As new pedagogies develop, programme and module authors have to consider which combination of technology/pedagogy/learner characteristics best enhances student satisfaction and produce the most efficient outcome. The best outcomes for learning are normally, by common consent, achieved by striking a balance between using traditional and new media, individually selecting and developing the products that are best suited for each student’s specific circumstances and learning styles.

**Distance Learning Delivery**

Distance Learning Delivery takes place in a variety of ways; these might be classified as: Print; Voice; Video and Data.

Print: this is the founding element of distance education programs and the basis from which all other delivery systems have evolved. Various print formats are available including: textbooks, study guides, workbooks. Academics soon learned that distance learning had to be more than mere reading and more than directed reading. Distance learning print based material developed styles to facilitate learning; e.g. Self Assessment Questions and Exercises embedded in the text.

Print was the dominant distance learning medium and as recently as 1991 it was thought that this: *will continue to be the most-used form of delivery in the foreseeable future* Verduin, and Clark (1991). Print has many advantages as an instructional medium. It is familiar, inexpensive, and portable. Its format allows readers access to any section, in any order, for unlimited period. A highly developed postal service makes distribution easy in most countries. It is the only medium that can be utilized without additional equipment, anytime and anywhere that a source of light is available.
Voice: As new technologies developed distance learning programmes took advantage of instructional audio tools. Tape recorders and radio broadcasts allow passive i.e. one way instruction. Telephones allow more dynamic interaction but until quite recently these were limited to 2 person conversations. Short-wave radio allows multi-party dialogue and these have often been used to connect remote students to central teachers; examples include bush radios schools in Australia.

Video: Instructional video tools include still images such as slides, pre-produced moving images (e.g., film, videotape), and real-time moving images combined with videoconferencing (one-way or two-way video with two-way audio). Again distance learning developed styles to facilitate learning; SAQ’s became linked to the video on tape students can be asked to pause while they consider a question. The development of CDRoms and DVD’s allowed progression to be linked to the correct answer to a question.

Data: Computers send and receive information electronically. For this reason, the term "data" is used to describe this broad category of instructional tools. Computer applications for distance education are varied and include:

- Computer-assisted instruction (CAI) or Computer Aided Learning (CAL); uses the computer as a self-contained teaching machine to present individual lessons.
- Computer-managed instruction (CMI); uses the computer to organize instruction and conduct student records and progress. The instruction itself need not be delivered via a computer, although CAI is often combined with CMI.
- Computer-mediated education (CME) - describes computer applications that facilitate the delivery of instruction. Examples include: electronic mail, fax, real-time computer conferencing, and World-Wide Web applications.

The MSc in Commercial Management by distance learning

In January 2001 UMIST commenced the provision of a Master of Science degree in Commercial Management for a major blue chip telecommunication company. The outline brief was simple: a distance learning masters degree for executives working in commercial management. The team responsible for the development of the programme, which included academics and representatives from the client organization, set an overall aim of facilitating accessibility to the programme for the busy executives by utilizing appropriate technology. The term appropriate was felt to be crucial; although the client organisation was at the forefront of a dynamic and fast moving technology the programme should consider all the technologies available and chose the one(s) which suited the needs of the students. A simple example was the medium that would be used to deliver the distance learning material; the material could easily be converted to CD-ROM format which would allow hyperlinks and screen-based SAQ’s. However the client organisation, including representatives from potential students, and the academics felt that the material should use traditional hard copy workbooks. The feeling was that most students would, in any event, print out the material and needed the comfort of a print based document. The most appropriate technology was traditional hard copy workbooks. The provision of CD-ROMs was retained as an option, to date it has not been
chosen by any student. The development team agreed with Campbell and Smith, (1996): technology amplifies bad pedagogy. Instructors and students need to have a solid understanding of how to use the technology, or communication will be largely ineffective. The technology has to be appropriate.

In addition to delivery via a series of distance learning modules using traditional hard copy workbooks the programme is reinforced by face-to-face teaching sessions. The face-to-face sessions comprise a one-day introductory session and a one-day revision session on the completion of the three-month module. During the intervening three months the development team considered how students might be supported, a commonly held problem with distance learning is high wastage and failure rates. A major factor in this is the absence of student interaction and student tutor contact (for a contemporary discussion see van der Merwe, D.F, (2001)). The development team proposed initiative to overcome these issues:

1. An always on forum for students to post messages to each other and the tutors;
2. A dedicated timetabled slot where students and tutors can interact in the usual tutorial sense.

Of course the problem for both these situations is that the students are geographically separate and distant from each other. In a traditional contact programme these are easily dealt with; the student message or white board allows students to post notes and for tutors to make announcements and tutorials deal with the normal student interaction.

The solution proposed was:

1. A dedicated webboard allowing students and academics to post electronic messages at any time. There are many proprietary software packages available; the board can be found at [http://lwtg.umist.ac.uk:3000/~BTcm/login](http://lwtg.umist.ac.uk:3000/~BTcm/login)
2. A weekly one-hour teleconference.

The two solutions are examples of the distinction between synchronous and asynchronous pedagogies in distance learning. Synchronous instruction requires the simultaneous participation of all students and tutors. The advantage of synchronous instruction is that interaction is done in "real time" and is immediate. The telephone conference is an example of synchronous pedagogy. Other examples include interactive TV, and computer conferencing, and Internet chatrooms.

Asynchronous instruction does not require the simultaneous participation of all students and tutors. Students do not need to be gathered together in the same location at the same time. The webboard is an example asynchronous delivery. Other examples include e-mail, listservers, audiocassette courses, videotaped courses, correspondence courses, and WWW-based courses. The webboard does however allow instant posting and replying and might be considered a hybrid scheme where asynchronous instruction can become synchronous if required. One tutor (finance involving much mathematics) decided that the telephone conference was not suitable for mathematical tutorials (the student
feedback, see later, corroborated this) and used the webboard as a chat room for a
dedicated one hour per week.

**Experience of the Telephone Tutorials**

The MSc in Commercial Management contains six taught modules by distance learning
each lasting twelve weeks; during the twelve weeks one telephone tutorial per week is
held. The telephone tutorials are timetabled at a set time each week to last a nominal 60
minutes. Like any traditional tutorial system different tutors have developed different
styles; it might be said a contingency approach has developed. Tutorials have ranged
from unstructured debates to tutors circulating a set of questions in advance. The range
of approaches includes:

- A question and answer session where the tutor waits for student questions;
- An unscripted and unprompted discussion or debate led by the tutor;
- Circulation in advance of a series of broad discussion topics; discussion then
  unstructured;
- Circulation in advance of a series of broad discussion topics; discussion then
  structured;
- Circulation in advance of specific discussion topics; discussion then unstructured;
- Circulation in advance of specific discussion topics; discussion then structured;
- Circulation in advance of specific question topics; discussion then unstructured;
- Circulation in advance of specific question topics; discussion then structured, tutor
  invites specific students to answer specific questions.
- Circulation in advance of specific debate topics; discussion then structured, tutor
  invites specific students to speak for and against specific motions (or theories etc.)

Since the programme started in 2001; two complete cohorts have progressed through the
taught element and the third cohort is at the time of writing (3rd Quarter 2003) completing
the taught element. The experience of telephone conferences is 2 cohorts x 6 modules x
12 weekly tutorials = 144 hours of telephone tutorials. It was very soon apparent that the
telephone tutorials were highly regarded by students and that the tutors were both
challenged and had developed a broad range of strategies to effective use. The high
regard by the students brought requests that sessions be recorded for the convenience of
those who could not attend, for whatever reasons. These recordings were also of great
interest to the tutors, they represent a rich seam of data for research and for reflection by
the programme team. How could the data be analysed? Content Analysis was chosen as
a qualitative analysis with a long and established history.

**Content Analysis**

Palmquist and Sloan (2003) describe Content Analysis as a research tool used to
determine the presence of certain words or concepts within texts or sets of texts.
Researchers quantify and analyze the presence, meanings and relationships of such words
and concepts, then make inferences about the messages within. To conduct a content
analysis, the text is coded, or broken down, into manageable categories on a variety of
levels; and then examined using one of content analysis' basic methods: conceptual analysis or relational analysis.

Content analysis is a time consuming process; historically analysis was done manually, the development of computers allowed the use of punch cards containing data punched in by human coders. Single studies could employ thousands of these cards. Human error and time constraints made this method impractical for large texts. However, despite its impracticality, content analysis was already an often utilized research method by the 1940's. Although initially limited to studies that examined texts for the frequency of the occurrence of identified terms (word counts), by the mid-1950's researchers were already starting to consider the need for more sophisticated methods of analysis, focusing on concepts rather than simply words, and on semantic relationships rather than just presence (de Sola Pool 1959). Both traditions still continue today, content analysis now is also utilized to explore more and wider fields in including mental models and their linguistic, affective, cognitive, social, cultural and historical significance. Because it can be applied to examine any piece of text, writing or occurrence of recorded communication, content analysis is currently used in an array of fields.

Berelson, (1952) describe content analysis as most often been thought of in terms of conceptual analysis. Conceptual analysis can be thought of as establishing the existence and frequency of concepts, represented by words of phrases, in a text. In conceptual analysis, a concept is chosen for examination, and the analysis involves quantifying and tallying its presence, the focus being on looking at the occurrence of selected terms within a text or texts, although the terms may be implicit as well as explicit. Relational analysis, like conceptual analysis, begins with the act of identifying concepts present in a given text or set of texts. However, relational analysis seeks to go beyond presence by exploring the relationships between the concepts identified. The focus of relational analysis is to look for semantic, or meaningful, relationships. Individual concepts, in and of themselves, are viewed as having no inherent meaning. Rather, meaning is a product of the relationships among concepts in a text.

The analysis of the Telephone Tutorials

The analysis of the tapes of the telephone tutorials was carried out by conceptual analysis; with the intention of understanding more of the existence and frequency of the concepts of: tutor contribution; student contribution; the nature of questions raised (open or closed; student to tutor and vice versa); the structure of the sessions and the number of active participants. This content analysis was followed by semi-structured interviews with students and tutors to explore attitudes with a view to improving tutorials and producing a protocol. It was immediately apparent that some participants sought to merely listen and not to contribute; these students (tutors were not allowed this luxury) were termed lurkers and their attitudes in particular were explored.

The sample: content analysis is a time consuming and labour intensive activity; indeed this is a major disadvantage (see later) so the sample size was necessarily limited and was chosen at random.
The initial descriptive findings

The sessions started with a general welcome and scene setting and mostly finished with a summary. The general welcome and scene setting ran between 2 minutes and 7 minutes and averaged 5 minutes. The summaries ran from nil to 7 minutes; some tutors developed a system of circulating a post-tutorial note which was a detailed summary. The sessions timetabled for one hour ran between 30 minutes and 1 hour 15 minutes; the average length was 46 minutes.

Three examples

Case study #1

The tutorial ran for 58 minutes 10 students in total attended. The general welcome and scene setting ran 2 minutes; the substantive section ran for 55 minutes and the summary for 1 minute. The tutor dominated the substantive section and spoke for 72% of the time; the students spoke for 22% of the time; the remainder of the time 6% was silent.

The tutor asked 24 questions of which 20 were closed questions (requiring yes no answers); 2 questions were general open questions, not aimed at any individual but for anyone to answer. The remainder were rhetorical i.e. they demanded no answer and were in fact statements by the tutor.

The students asked 12 questions; all were open questions asking the tutor to explain or develop points. Each question was posed in a way related to the students work experience: My company's procedure/experience is X how does this relate to your point or your written material?

There were 4 active students (who contributed) and 6 who did not contribute beyond monosyllabic responses (yes/no/uhuh). 1 students dominated the student contribution i.e. 67% of the time was 1 particular student.

Case study #2

The tutorial ran for 37 minutes; 11 students in total attended. The general welcome and scene setting ran 5 minutes; the substantive section ran for 31 minutes and the summary for 1 minute. The tutor dominated the substantive section and spoke for 62% of the time; the students spoke for 44% of the time; the remainder of the time 4% was silent.

The tutor asked 14 questions of which 10 were closed questions (requiring yes no answers); 2 questions were general open questions and the remainder were rhetorical i.e. they demanded no answer and were in fact statements by the tutor.
The students asked 2 questions; all were open questions asking the tutor to explain or develop points. Each question was posed in a way related to the students work experience; as case study 1.

There were 6 active students (who contributed) and 5 who did not contribute beyond monosyllabic responses (yes/no/uhuh). 2 students dominated the student contribution i.e. 74% of the time was 2 particular students.

Case study #3

The tutorial ran for 58 minutes 10 students in total attended. The general welcome and scene setting ran 6 minutes (a set of questions had been circulated in advance); the substantive section ran for 40 minutes and the summary for 12 minute (the tutor followed this with a set of notes after the tutorial). The tutor and students shared the substantive section; tutor spoke for 52 % of the time; the students spoke for 48% of the time; there was no silent time.

The tutor asked all the questions on the sheet circulated in advance (8) and 14 further questions of which 12 were open questions; 2 questions were closed questions and there were no rhetorical statements. The questions were all directed at individuals by name and 20 questions were answered by the named individual; on the other occasions another student broke in.

The students asked many questions, it was difficult to count a number since much debate flowed and students became very stimulated; all were open questions asking anyone (not merely the tutor) to explain or develop points. Each question was posed in a way related to the students work experience: since they all share the same employer this was to be expected

All the students contributed; no one individual dominated but students contributed much less than others.

Semi-structured interview

Following the content analysis a brief summary of results was circulated to the students and a series of telephone based semi-structured interview, eight in total, were carried out. The structure as far as it was developed was:

- The principle of telephone tutorials
- The practice on the MSc in Commercial Management

The feedback on principle was without exception positive. The effectiveness of these sessions has indicated that these sessions have been one of the most rewarding aspects of the programme: contributing to the maintenance of moral and group cohesion.

The principle of telephone tutorials is fine and, in fact, a key component
of a distance learning programme.

The principle of running the audios is excellent for a distance learning course.

The use of appropriate technology was highlighted:

... for the students who use the technology all the time we are well used to how the thing works

The feedback on practice has been collected under a variety of headings.

**Discipline and peer assistance**

Excellent weekly discipline for distance learning, particularly if also working full-time; Excellent tool to engender a "team" ethic with other students and tutors;

They really helped us to gel as a unit. As a geographically dispersed group, we could not spare the time to travel to meet on a weekly basis but we needed to do the work and share our experiences so they are essential in bridging the geographical gap.

How valuable the teletutorials are from the perspective of both knowledge sharing tutor to students and students-students. Also, when working individually and remotely, weekly teletutorials are invaluable to keep on track and in touch with each other, sharing concerns, ideas and comments. Due to the spread of the people across the country it is impractical to meet up face-face this often, but absolutely essential to maintain relationships and avoid feeling of isolation.

**Subject matter**

Telephone tutorials only work for certain subjects i.e., they do not work for the dreaded finance model.

Some subjects may be less suited to teleconference, e.g. financial topics were difficult to manage (a visual aid like Net meeting would help here where you can see the info on your pc screen).

**Protocol and management**

To be effective it needs to be treated like a face-to-face meeting and be driven/managed by a "chair" (with agenda if possible) otherwise it can easily drift from being a useful tool to being a anarchic talking shop with no direction.

Attendees (and particularly the "chair") need to be punctual to start call. It is annoying/bad discipline to have people dial-in only to sit around waiting to start.
Useful rule to agree timespan of call otherwise it can drift into the talkshop again.

They work better the more people that have prepared and as such the sessions can be carried by those who have prepared which if the number is not great can lead to a stilted session.

It was good to have an agenda/topic for discussion in place beforehand, as it was easy to get side-tracked into other discussions.

The lurkers

Initial observations that students were attending but not participating brought a variety of responses:

May be the Tutor should bring quiet people into the conversation?

I started as a lurker but found it gave me the confidence to develop and I subsequently joined in.

Equally some concerned that they dominated:

I was always conscious that I was one of the more vocal participants in the calls. Maybe there was a bit of scope to be more directive about shutting people like me up and bringing others in? Maybe the introduction of a little protocol that required participants to identify themselves before speaking would help to bring people in e.g. "it's Iain, I think...."

Developments

From the telephone conferences students developed their own further peer group support. The telephone conference system is activated by access to a facility provided by most telephony providers; this system is open 24 hours a day and not confined to the timetabled sessions. Groups started to use the facility at other times: as precursors to the tutorials; as formal and informal peer group support sessions and as formal and informal revision sessions.

It may be useful to have some spare time at the end to either continue the conversation as a group or to be available for a 10 minute chat if someone has a problem - usually those conversations happen as a class is packing up and leaving the room.

The major development for the programme team has been the production of a protocol for telephone tutorials. This is simple and pragmatic:
Details of the telephone conferences will be provided at the start of modules; you will be given a phone-number; a reference and a PIN. Please dial in and join the telephone conference at the appointed time. The tutor leading the telephone conference will give an introduction and ask each person present to introduce himself or herself.

Then the tutor will then explain how the tutorial will proceed; it may be that a set of questions have been circulated in advance and these will be addressed. Or the tutorial will proceed on a question and answers basis; with questions being directed at the tutor. Please expect to participate and expect to be questioned directly.

Telephone conferences can be chaotic if some simple rules are not observed:

- Behave as if you are in a traditional meeting; direct your questions through the chair;
- If you would like to speak state your name first;
- Try to be brief;
- Do not try to speak ‘over’ others;
- Don’t feel you have to speak; like any meeting you may learn from others.

Advantages, Disadvantages and Limitations

Like all analytical methods content analysis suffers from disadvantages and limitations, both theoretical and procedural. In particular, content analysis: can be extremely time consuming and labour intensive it is inherently reductive and tends too often to simply consist of word counts. Content analysis often disregards the context that produced the text, as well as the state of things after the text is produced. However content analysis can offer advantages in particular, it: looks directly at communication via texts or transcripts, and hence gets at the central aspect of social interaction; can allow for both quantitative and qualitative operations. Content analysis can provide valuable historical perspectives and can be used to interpret texts for purposes such as the development of protocols. It is an unobtrusive means of analysing interactions and providing insight into complex models of human thought and language usage.

Further Information

Two organisations might be considered the starting point for any review of distance learning. The Global Distance EducationNet (Global DistEdNet) at the World Bank and the Open University’s Centre for Distance Learning (ICDL). ICDL is an internationally-recognised centre for research, teaching, consultancy, information and publishing activities based in the UK Open University http://www.icdl.open.ac.uk/. The Global Distance EducationNet (Global DistEdNet) is a knowledge guide to distance education designed to help clients of the World Bank and others interested in using distance education for human development http://www1.worldbank.org/disted/home.html
Conclusion

This paper has described the development of a new Master of Science degree in Commercial Management for a major blue chip telecommunication company. The pedagogic issues surrounding the provision of tutorial support via telephone tutorials are investigated. Recordings of the telephone tutorials have been analysed using content analysis, allowing analysis of the interactions between tutors and students and the interactions between students themselves. The content analysis facilitated understanding of the existence and frequency of the concepts of: tutor contribution; student contribution; the nature of questions raised (open or closed; student to tutor and vice versa); the structure of the sessions and the number of active participants. This content analysis was followed by semi-structured interviews with students and tutors to explore attitudes with a view to improving tutorials and producing a protocol.

In the rush for e-learning many may be tempted to ignore or forget a basic rule; the technology must be appropriate. Put another way KISS; Keep It Simple Stupid. Telephone conferencing is simple and appropriate. The conclusion must be these results justify the selection of telephone tutorials. However telephone tutorials require different skills for the tutor; case studies 1 and 2 show markedly different profiles from case study 3 and the presence of a different tutor may explain these.

References


Palmquist, M. and Sloan, S., (2003), An Introduction to Content Analysis, The Writing Centre at Colorado State University at [http://writing.colostate.edu/site_info.cfm](http://writing.colostate.edu/site_info.cfm)
